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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/888,365	06/22/2001	Stephen DeOrnellas	TEGL-01092US1	8894

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EXAMINER	
ALEJANDRO MULERO, LUZ L	
ART UNIT	**PAPER NUMBER**
1763	

DATE MAILED: 02/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/888,365	DEORNELLAS ET AL.	
	Examiner	Art Unit	
	Luz L. Alejandro	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 October 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14,15,19,56,59-61 and 64-66* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14,15,19,56,59-61 and 64-66* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 64 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 64 recites the limitation of "heating to a temperature greater than 300 °C" while independent claim 14 recites heating to a temperature between 300 C to 600 °C. Therefore, dependent claim 64 fails to further limit claim 14.

Claim 66 is objected to because of the following informalities: at lines1-2, the phrase "in a surface selected from side electrodes, electrode shields" requires the word – and – instead of the comma for proper grammar. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 60-61 and 66 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 60 and 61 depend on cancelled claim 58. For purposes of examination, it is assumed that the claims are depending on claim 59.

In claims 66-line 2, it is not clear what applicant is trying to claim by the phrase "heating the heater".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 56 and 59-61 are rejected under 35 U.S.C. 102(b) as being anticipated by Collins et al., U.S. Patent 5,556,501.

Collins et al. shows the invention as claimed including a method of operating an etch reactor which comprises a reactor chamber 16B, an upper electrode 17T/17S with power applied thereto from a RF source 40, at least one side electrode 12, a first heater 96 that heats said upper electrode, and a second heater 92 that heats said at least one side electrode (see fig. 1 and col. 7-lines 45-50), and gas inlets and outlets, the method comprising: introducing process gas into said chamber 16B, and heating the upper electrode with said first heater to a temperature such that any material resulting from the reaction deposited on the surface of the upper electrode forms a stable film comprising halogen elements (see fig. 1 and its description), and heating the at least one side electrode with the second heater. For a complete description see fig. 1 and its description and col. 21-line 43 to col. 22-line 43.

With respect to claims 60-61, note that inherently any gas collected on the upper surface will desorb or boil off from the surface as a result of heating of these surfaces.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 14-15 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai et al., WO 97/27622.

Imai et al. shows the invention substantially as claimed including a method of operating an etch reactor which comprises a reactor chamber 7, an upper electrode 5, a heater 11 that heats said upper electrode, and gas inlets and outlets comprising: introducing process gas into said chamber 7, and heating the upper electrode with said

heater 11 to a temperature such that any material resulting from the reaction deposited on the surface of the upper electrode forms a stable film comprising halogen elements (see fig. 1 and abstract).

Imai et al. fails to expressly disclose heating the upper electrode to a temperature of about 300 Celsius to about 500 Celsius. However, a prima facie case of obviousness still exists because generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imai et al., WO 97/27622 in view of DeOrnellas et al., WO 99/25568.

Imai et al. is applied as above but fails to expressly disclose a platinum etch method or where oxygen and chlorine are present in the reactor and heating the upper electrode causes deposits of oxygen and chlorine to de-absorb from the upper electrode in order to leave mostly platinum deposited on the surface. DeOrnellas et al. discloses where platinum or other materials are etched in a chlorine gas and oxygen is inherently present in the chamber (see page 8, line 25 to page 9, line 17). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Imai et al. so as to perform the platinum

etching process of DeOrnellas et al. because this would be a suitable method, for example, to reduce the platinum deposits that can form on the wafer.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imai et al., WO 97/27622 in view of Keizo, JP 07-130712A.

Imai et al. is applied as above but fails to expressly disclose a platinum etch method or where oxygen and chlorine are present in the reactor and heating the upper electrode causes deposits of oxygen and chlorine to de-absorb from the upper electrode in order to leave mostly platinum deposited on the surface. Keizo discloses performing plasma etching of platinum using a chloride containing gas (see abstract). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Imai et al. so as to perform the platinum etching process of Keizo because this would be a suitable method, for example, to reduce the platinum deposits that can form on the wafer.

Claims 56, 59-61 and 65-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai et al., WO 97/27622 in view of Collins et al., U.S. Patent 5,556,501.

Imai et al. is applied as above but fails to expressly disclose providing power to the upper electrode and a three electrode structure with a side electrode which is heated by a second heater. Collins et al. discloses an upper electrode 17S with power applied thereto from a RF source 40 and heated by a first heater 96 and an alternative

embodiment in which a three electrode structure has a side electrode formed from the walls, wherein the side electrode is heated by a second heater 92 (see fig. 1 and its description, and col. 21-line 43 to col. 22-line 43). Therefore, in view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Imai et al. so as to provide power to the upper electrode, use a three electrode structure and heating the side electrode with a second heater, as disclosed by Collins et al. because providing power to the upper electrode allows for the flexibility of both inductive and capacitive coupling during the etching process, the three electrode process allows for additional process control and enhancement and heating the side walls provides controllability of the temperature and of the process (see col. 21-lines 44-46).

With respect to claims 60-61, note that inherently any gas collected on the upper surface will desorb or boil off from the surface as a result of heating of these surfaces.

Regarding claims 65-66, Imai et al. fails to expressly disclose heating the side electrode to a temperature of between about 300 Celsius to about 500 Celsius. However, a prima facie case of obviousness still exists because generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Claims 14-15 and 64-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al., U.S. Patent 5,556,501.

Collins et al. is applied as above but fails to expressly disclose heating the upper electrode or the side electrode to a temperature of about 300 Celsius to about 500 Celsius. However, a prima facie case of obviousness still exists because generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al., U.S. Patent 5,556,501 in view of DeOrnellas et al., WO 99/25568.

Collins et al. is applied as above but fails to expressly disclose a platinum etch method or where oxygen and chlorine are present in the reactor and heating the upper electrode causes deposits of oxygen and chlorine to de-absorb from the upper electrode in order to leave mostly platinum deposited on the surface. However, it should be noted that Collins et al. discloses that the apparatus of fig. 1 can be used to etch a variety of materials including etching metals (see col. 6-line 28). DeOrnellas et al. discloses a similar three electrode configuration as in Collins et al. (see fig. 7) where platinum or other materials are etched in a chlorine gas and oxygen is inherently present in the

chamber (see page 8, line 25 to page 9, line 17). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Collins et al. so as to performing the platinum etching process of DeOrnellas et al. because this would be a suitable method, for example, to reduce the platinum deposits that can form on the wafer.

Claim 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al., U.S. Patent 5,556,501 in view of Keizo, JP 07-130712A.

Collins et al. is applied as above but fails to expressly disclose a platinum etch method or where oxygen and chlorine are present in the reactor and heating the upper electrode causes deposits of oxygen and chlorine to de-absorb from the upper electrode in order to leave mostly platinum deposited on the surface. However, it should be noted that Collins et al. discloses that the apparatus of fig. 1 can be used to etch a variety of materials including etching metals (see col. 6-line 28). Keizo discloses performing plasma etching of platinum using a chloride containing gas (see abstract). Furthermore, note that inherently oxygen will be present in the chamber. In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Collins et al. so as to performing the platinum etching process of Keizo et al. because this would be a suitable method, for example, to reduce the platinum deposits that can form on the wafer.

Response to Arguments

Applicant's arguments filed 10/10/03 have been fully considered but they are not persuasive. Applicant argues that Collins fails to disclose a second heater provided in the side electrode. However, this is not the case because the second heater 92 comprises a structure for flowing a fluid 93 through the side electrode 12 (see fig. 1).

With respect to the rejection of claim 14, applicant argues that the temperature range in claim 14 is not merely routine optimization but is a critical temperature range. However, the criticality of this temperature range is not commensurate in scope with the claim. Furthermore, the criticality of the temperature range has not been shown through secondary evidence such as affidavits or declarations alleging unexpected results and therefore the rejections over Imai and Collins are maintained.

Concerning the rejection of claim 19 using Collins or Imai in view of DeOrneallas, and Collins or Imai in view of Keizo one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

With respect to the rejection of claims 56-61 over Imai in view of Collins, this argument is maintained because the second heater 92 comprises a structure for flowing a fluid 93 through the side electrode 12 of Collins (see fig. 1).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 571-272-1430. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 571-272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Luz L. Alejandro
Primary Examiner
Art Unit 1763

February 17, 2004